## REMARKS/ARGUMENTS

The non-final office action mailed on October 18, 2011, has been reviewed and carefully considered. Reconsideration is respectfully requested.

### Amendments to the Claims

Claims 1, 4-6, 10 and 11 were pending in the present application prior to this amendment. Claims 1, 4-6, and 10-12 are now pending in the present application; among them, claims 1 and 12 are independent claims. Claim 12 has been added. Claim 1 has been amended. No new matter has been added.

### Claim Rejections - 35 U.S.C. §103

In the office action (page 3), claims 1, 4 and 10-11 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 7,013,424 (James) in view of U.S. Patent No. 7,305,615 (Ross) and further in view of U.S. Patent No. 6,938,204 (Hind).

In the office action (page 8), claims 5 and 6 stand rejected under 35 U.S.C. §103(a) as being obvious over James, Ross and Hind and further in view of U.S. Patent No. 7,080,094 (Dapp).

### Comments for 103 Rejections

The presently claimed invention relates to XML (extensible mark-up language) processing by parsing, and more particularly, to a separate and independent XML processor not part of the conventional software parsing of the received XML document **in which a part of XML processing performed by the conventional software parsing on a received XML documents is now performed by a hardware to not only reduce load of system but also improving an XML processing speed performed by the conventional software parsing on a received XML documents**.

Also, the presently claimed invention relates to an XML processing method in a system having the separate and independent XML processor from the software XML for processing a received XML document, **while this independent XML processor**

**produces the same output on the received XML document as if the XML
processing was done by software on the same XML document**. As shown in FIG. 1
of the presently claimed invention, FIG. 1 discloses is a schematic diagram illustrating
operations of an XML processor and conventional generalized XML parser based on
software of a received XML documemt.  As shown in FIG. 1, an XML processor 13
performed by the hardware according to the presently claimed invention and software-
based conventional generalized XML parsers 11 not performed by hardware are **both
able to receive and process the same input XML document 10 and generate the
same product 12, where when the processing of the receive input XML document
by XML processor 13, the XML processing time due to parsing is reduced over
the software-based conventional generalized XML parsers 11 not having the
claimed hardware**.

Nowhere are the cited prior art references and especially James able to disclose
that the same XML document is received by the special purpose processor and the
general purpose processor because the special purpose processor of James in only
used to **offload** the processing done by the general purpose processor (James
Abstract; col. 5, lines 5-22; and FIG. 3).

Accordingly, how can James have the general purpose processor receive a
same input such that the hardware and the software portion of the XML processing
produces the same output if general purpose processor performing the software
processing the XML documents only receives the XML document **after** the special
purpose processor has offloaded the part of the processing by the gateway 346 as
shown in FIG. 3 of James. James confirms that the process performed by the gateway
346 is not the same document performed by the software of the general purpose
processors 310 a-e because the general purpose processor is only capable of
processing HTML and the special purpose processor is only capable of processing XML
(James page 7, lines 1-25 and FIG. 3)?

Generally, the prior art software-based conventional generalized XML parsers
are viewed as a software library used to facilitate manipulation of XML documents. Most
conventional XML parsers are configured to be compatible with XML grammar.
However, a significant drawback of the conventional XML parsers is that such

conventional parsers require relatively large software components, which causes load of a system that processes the increase uses from receiving XML documents through the internet, where the Internet has increased the receipt of XML document due to increase of data from the information-oriented era. In particular, usage of web has been rapidly increasing in a variety of embedded systems, such as cellular phones, digital home electronics, telematics terminals, PDAs (Personal Digital Assistant), web TVs, and the like, besides typical PCs. However, these embedded systems typically have limited computing power and memory capacity, when being compared to say for example a PC. As a result, the software-based conventional XML parsers of the prior art are generally not suitable for use in embedded systems.

In contrast, the presently claimed invention discloses an **efficient hardware based XML parsers for reducing the time required to parse XML documents previously performed through programming**, which is better suited for these non-PC-based devices in order to reduce the loads put on these non-PC based devices when performing XML processing in theses non-PC-based devices.

Accordingly, the presently claimed invention provides an XML processor in which a part of software-based XML processing performed on the received XML document is performed in a hardware manner based on independent hardware, thereby improving an XML processing speed previously done by conventional software-based processing/parsing of a received XML document(s).

That is, the presently claimed invention discloses an XML processor that receives an XML document having a first memory storing software for performing an XML processing, variables, and values required to execute software on the received XML document; a hardware processing module performing a part of the XML processing in a hardware manner on the received XML document; a second memory employed by the hardware processing module; and a CPU controlling the XML processing on the received XML document by the software stored in the first memory to generate a first output if the XML is executed by software and to generate a second output if the part of the XML processing is performed in the hardware manner such that **the software is able to completely process the received XML document without the hardware processing module to generate the first output, wherein if the**

**hardware processing module performs the XML processing, the hardware
processing is configured to perform part of the software processing without the
software processing having to perform the part performed by the hardware
processing**.

Hence, the presently claimed invention discloses that the XML processing time
performed on the received XML document, which was previously executed by the CPU
controlling the XML processing by the software in the first memory, is **now** reduced from
the hardware processing module performing the part of the XML processing, which was
previously performed by software is now done in the hardware manner.

Claim 1 has been amended to <u>better</u> clarify this above described novel aspect of
the presently claimed invention, which recites inter alia:

--a CPU controlling the XML processing on the received XML
document by the software stored in the first memory to generate a first
output if the XML is executed by software, and to generate a second
output if the part of the XML processing is performed in the hardware
manner,
<u>wherein the software is able to completely process the
received XML document without the hardware processing module to
generate the first output,</u>
<u>wherein if the hardware processing module performs the XML
processing, the hardware processing is configured to perform part of
the software processing without the software processing having to
perform the part performed by the hardware processing</u>--.

The Applicants respectfully submit that the cited references do not describe,
teach, or suggest each and every one of the limitations recited in amended clam 1.
That is, nowhere in James nor Ross nor Dapp nor Hind, neither alone or in combination,
discloses or suggests relates to XML (extensible mark-up language) processing by
parsing, and more particularly, to a separate and independent XML processor not part
of the conventional software-based parsing of the received XML document in which a
part of XML software-based processing preformed on the received XML document is
performed by a hardware to not only reduce load of system but also improving an XML
processing speed, **wherein the generated output performed by hardware on the
received XML documents produces a same output as if the part of the XML
processing performed in the hardware manner, which generated the output, was**

**done by the CPU controlling the XML processing on the received XML document by the software stored memory**. That is, the outputs from the parsing performed on the same received XML document, which if was done in either hardware or software would produce the same output.

Accordingly, the applicants respectfully submit that James, Ross, Dapp, and Hind are silent for teaching the following: that receives an XML document having a first memory storing software for performing an XML processing, variables, and values required to execute software on the received XML document; a hardware processing module performing a part of the XML processing in a hardware manner on the received XML document; a second memory employed by the hardware processing module; and a CPU controlling the XML processing on the received XML document by the software stored in the first memory to generate a first output if the XML is executed by software, and to generate a second output if the part of the XML processing is performed in the hardware manner such that **the software is able to completely process the received XML document without the hardware processing module to generate the first output, wherein if the hardware processing module performs the XML processing, the hardware processing is configured to perform part of the software processing without the software processing having to perform the part performed by the hardware processing** so that the XML processing time performed on the received XML document, which was previously executed by the CPU controlling the XML processing by the software in the first memory, is **now** reduced from the hardware processing module performing the part of the XML  processing previously performed by software in the hardware manner.  Thus, the applicants respectfully submit that claims 1, 4-6, and 10-11 should now be in condition for allowance.

In contrast, the applicants respectfully point out that James discloses using special purpose processor implemented in hardware, which is in front of the general purpose processor, to "offload" processing done by the general purpose processor.

Accordingly, nowhere can James disclose receiving an XML document and then having both the general purpose processor(s) (310 a-e) and the special purpose processor produce the same outputs from parsing the received XML document because the input to the general purpose processor is **different** from the input to the special

purpose processor (346) (James FIG. 3).  Ross, Dapp, and Hind fail to make for the

deficiency of James.

In contradistinction, FIG. 4 of the presently claimed invention illustrates an XML

processor performing part of the software-based XML processing/parsing by hardware

as follows:

> "An XML processor 13 shown in FIG. 4 comprises a CPU 40 that
> generally controls the XML processor 13, a memory 41 that stores
> software for performing a specific function of the CPU 40, variables, and
> values required to execute software instructions, a hardware processing
> **module 42 that performs a part of XML processing in a hardware
> manner**, and a memory 43 used in the hardware processing module 42.
> A bus 44 that receives and transmits data connects the above
> components.
> FIG. 4 shows that a specific function among the XML processing
> functions can be realized in a **hardware manner**.  For example, a memory
> management function used in parsing, i.e., processing of assigning,
> returning, and reassigning memory, influences the most the performance
> of software parsers.
> Referring to FIG. 4, **the XML processor according to the
> embodiment of the present invention can realize the memory
> management function in a hardware manner in order to improve the
> performance of XML processing**.  The XML processor according to the
> embodiment of the present invention can realize an XML DTD and a state
> machine with respect to an XML schema, which are frequently used in
> XML processing, in a hardware manner, in addition to the memory
> management function",

(specification page 4, lines 6-23 and FIGs. 4-8 **[emphasis** added]).

As described above, the presently claimed invention provides an XML processor

in which a part of software-based XML processing/parsing is performed on a received

XML document in a hardware manner based on independent hardware, which is

separate from the software-based processing of the XML document but produces the

same output from the software-based processing of the XML document, and which

means that part of the software-based processing is now being performed by hardware

to generate a same output as if the received XML document was completely processed

by the conventional software-based XML processing.  Thereby, the software with part of

the processing of an XML document by hardware disclosed by presently claimed

invention improves an XML processing speed done previously only by software and

thus reduces computational load (i.e.; eliminates software processing of an XML document) of a system for using the convention software-based XML processing on a received XML document.

Therefore, the applicants respectfully submit that nowhere does James nor Ross nor Dapp nor Hind nor any of the examiner's cited references, neither alone nor in combination, disclose nor suggest each and every one of the limitations recited in amended claim 1 above.

## DEPENDENT CLAIMS

The other claims are dependent from independent claim 1 discussed. Thus, the remaining dependent claims are therefore believed patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

New claim 12 has been added to include similar limitations to those recited in amended claim 1 above but broader. Accordingly, nowhere do the cited references teach, disclose, or suggest each and every one of the limitations of claim 12. Therefore, the applicants respectfully submit that claim 12 is also in condition for allowance for at least the reasons mentioned above in amended claim 1.

Conclusion

For the reasons set forth above, the applicant respectfully submits that claims 1, 4-6, and 10-12, now pending in this application, are in condition for allowance over the cited references. Accordingly, the applicant respectfully requests reconsideration and withdrawal of the outstanding rejections and earnestly solicits an indication of allowable subject matter.

This amendment is considered to be responsive to all points raised in the office action.

The examiner is encouraged to contact the undersigned attorney by telephone to expeditiously resolve any remaining questions or concerns.

Respectfully submitted,

Dated: _____

Keith S. Van Duyne, Reg. No. 54,505
Ladas & Parry LLP
224 South Michigan Avenue
Suite 1600
Chicago, Illinois 60604
(312) 427-1300